

REMARKS

1. Claim Objections

Claims 7 and 13 have been amended to correct editorial errors pointed out by the Examiner. No new matter is introduced.

5 **2. Claim Rejections – 35 U.S.C. 103(a)**

Claims 1 – 2, 5 – 8 and 15 – 16 were rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant’s Admitted Prior Art in view of Hilpert et al.

Response

Claim 1

10 As detailed in the background information of the specification, the instant application aims to improve on Applicant’s Admitted Prior Art (herein AAPA) methods by providing a new method of transient detection that does not utilize the complicated psychoacoustic model. The applicant, however, disagrees that a combination of the transient detection method of Hilpert with the AAPA would give the method of Claim 1.

15 Hilpert teaches detecting a transient of a discrete-time input signal, wherein the detection is performed in the time domain all the time, whereas both the AAPA and Claim 1 relate to detecting a transient of a pulse code modulation (PCM) signal, which is in the frequency domain.

20 Furthermore, Hilpert teaches performing transient detection of the discrete-time signal by filtering the signal after it has been divided into segments each having a plurality of discrete-time sampled values in the time domain, and utilizing **both** the filtered signal **and** the unfiltered signal as means of determining the existence of

transients. As each segment to be processed by the following functional blocks includes time domain information (i.e. discrete-time sampled values) and has no frequency domain information [Col. 7, lines 39 – 64], the applicant asserts that Hilpert's transient detection is for detecting the transient using time domain information only. As clearly illustrated in 5 Hilpert Fig. 2, the output of the segmentation block (14) and the output of the high-pass filter (16) are time-domain signals. Therefore, Hilpert fails to teach or suggest any features directed to frequency band selection and analysis. Applicant's Claim 1, however, claims "each of the subband samples having a plurality of **frequency subbands**" and 10 "determining the block length of the window according to an energy sum of the **frequency subbands** of the reference sample data **in a predetermined frequency range**". The applicant asserts that frequency subband selection and analysis included in the claimed transient detection are neither taught nor suggested by the teachings of Hilpert.

Hilpert further states that: "What the method of the present invention requires is that 15 the signal be processed, i.e. filtered, in the time domain, this occurring in such a way that the spectral properties of this signal differ from those of the unprocessed, i.e. unfiltered signal" [Col. 9, lines 55 – 58]. As Claim 1 does not filter the signal after the signal has been divided into the plurality of subbands and does not utilize two signals having different spectral properties as a basis for detecting transients, the applicant asserts that 20 the method of Claim 1 would not be suggested by a combination of the teachings of the AAPA and Hilpert, because the essential limitation of Claim 1, i.e. the transient detection method, is neither taught nor suggested by Hilpert.

In addition, Hilpert does not teach selecting subband samples from the plurality of 25 subband samples as reference data. As clearly stated in Claim 1, the method comprises "selecting subband **samples**" ("**different subband samples** corresponding to the input signal in **different time intervals**", i.e. different segments) from the plurality of subband samples as reference data, and determining the block length of the window according to

an energy sum of the frequency subbands of the reference sample data. Hilpert explicitly states that transient detection comprises “a comparison with the energy $E_f(T - 1)$ of the segment preceding the current segment and with the energy $E_f(T - 2)$ of the next to last preceding segment then supplies the criterion for the energy rise in the discrete-time audio signal from one segment to the next” [Col.8, lines 30 – 35] as given by equation (3) wherein “the last term of equation (3) describes a comparison of the **current energy** of the **high-pass filtered discrete-time audio signal** in the **current segment** with a **filter minimum energy** E_{minF} ” (*emphasis added*) [Col.8, lines 42 – 45]. The E_{minF} of Hilpert is a criterion for the current energy of the high-pass filtered discrete-time audio signal in the current segment only, but is neither a criterion for an energy sum of the frequency subbands nor a criterion for an energy difference between two adjacent subsample data. As argued above, Hilpert does not teach selecting subband samples from the plurality of subband samples as reference data, and the input signal of Claim 1 is not high-pass filtered or a discrete-time audio signal. Furthermore, a comparison of **current** energy in a **current** segment is not equivalent to an energy **sum** of subband samples, and Claim 1 does not suggest a filter minimum energy as a criterion for the current energy of the high-pass filtered discrete-time audio signal in the current segment. The applicant contends that none of the essential features of Hilpert teach or suggest the limitations of Claim 1.

20 For these reasons, the applicant believes Claim 1 should be found allowable.

Claim 2

As detailed above, Hilpert does not teach selecting reference sample data comprising a plurality of segments, and therefore does not teach the limitation of Claim 2 “dividing the reference sample data into several subsample data”. Furthermore, Claim 2 is dependent on Claim 1 and should be found allowable if Claim 1 is found allowable.

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Claim 5 – 8

Claims 5 – 8 are dependent on Claim 1 and should be found allowable if Claim 1 is found allowable.

Claims 15 – 16

5 Claims 15 – 16 teach all the salient points of Claim 1. For the reasons detailed in the response to Claim 1, the applicant believes that claims 15 – 16 should be found allowable.

Claims 3 – 4 and 17 – 18 were rejected as being unpatentable over Hilpert et al. and further in view of Davidson et al.

Response

10 Claim 3

As the limitation of Claim 3 “let the subsample data in the second comparing process include different subband samples” depends upon subband samples of the reference sample data, and as Hilpert does not teach or suggest selecting a plurality of subbands as reference sample data (as argued in the response to Claim 2), the applicant contends that a
15 combination of the teachings of Hilpert and Davidson would not result in the method of Claim 3. Therefore, Claim 3 should be found allowable.

Claim 4

Claim 4 is dependent on Claim 1 and should be found allowable if Claim 1 is found allowable.

20 Claims 17 – 18

Claims 17 and 18 contain similar limitations to claims 3 and 4 respectively. For the

reasons detailed under the responses to claims 3 and 4, the applicant believes claims 17 and 18 should be found allowable. Furthermore, claims 17 and 18 are dependent on Claim 15. As the applicant believes Claim 15 has been placed in a position for allowance, claims 17 and 18 should also be found allowable.

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Claims 9 – 10, 12 – 14, 19 – 20 and 22 were rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art in view of Hilpert et al.

Response

Claim 9

10 Claim 9 claims a polyphase filter for producing a plurality of subband samples. Hilpert teaches “a segmenter 14, which supplies consecutive segments of length S at its output” [Col. 7, lines 14 – 15] and a high-pass filter 16, which filters the consecutive segments. Furthermore, Hilpert teaches that the consecutive segments (unfiltered) are also fed into a spectral detector 18. The apparatus of Claim 9 does not perform different 15 concurrent processes on the input signal.

Furthermore, Claim 9 teaches a subband selector “for selecting the plurality of subband samples as reference sample data”. As argued in the response to Claim 1, Hilpert neither teaches nor suggests selecting reference sample data, and therefore a combination of the apparatus taught by Hilpert with the AAPA apparatus would still not result in the 20 transient detection functionality detailed in Claim 9, as no reference sample data is selected, and therefore the energy calculator would also have a different function. Furthermore, the partition device would be redundant, as Hilpert does not teach **further** dividing the consecutive segments, whereas Claim 9 teaches further dividing the reference sample data according to the energy sum comparison.

25 For these reasons, the applicant asserts that a combination of the teachings of the

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AAPA and Hilpert would not result in the apparatus claimed in Claim 9, and Claim 9 should therefore be found allowable

Claims 10 and 12 – 14

Claims 10 and 12 – 14 are dependent on Claim 9 and should be found allowable if
5 Claim 9 is found allowable.

Claim 19

Claim 19 contains similar limitations to Claim 9. As the applicant believes Claim 9 has been placed in a position for allowance, Claim 19 should also be found allowable.

Claims 20 and 22

10 Claims 20 and 22 are dependent on Claim 19 and should be found allowable if
Claim 19 is found allowable.

Claims 11 and 21 were rejected under 35 U.S.C. 103(a) as being unpatentable over
Applicant's Admitted Prior Art in view of Hilpert et al. and further in view of Davidson et
15 al.

Response

Claim 11

Claim 11 is dependent on Claim 9 and should be found allowable if Claim 9 is found allowable.

20 Claim 21

As Claim 21 contains similar limitations to Claim 11, the applicant believes Claim

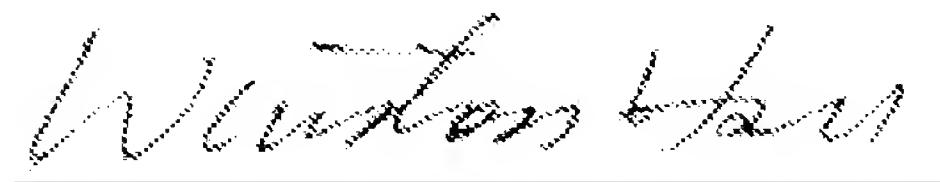
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21 should be found allowable. Furthermore, Claim 21 is dependent on Claim 19 and should be found allowable if Claim 19 is found allowable.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

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Sincerely yours,



Date: 12.06.2007

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15 Note: Please leave a message in my voice mail if you need to talk to me. (The time in D.C. is 13 hours behind the Taiwan time, i.e. 9 AM in D.C. = 10 PM in Taiwan.)